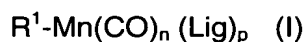


**Amendments to the Claims:**

The following claims will replace all prior versions of the claims in this application (in the unlikely event that no claims follow herein, the previously pending claims will remain):

1. (Original) A method of polymerising ethylenically unsaturated monomers in which at least one ethylenically unsaturated monomer is polymerised using a catalyst system having a manganese carbonyl radical initiator, a halogen containing reactive substrate and an allylic halogen substituted chain termination agent.

2. (Original) A method as claimed in claim 1 wherein the initiator is or includes a compound of the formula (I):



where

$R^1$  is  $C_1$  to  $C_{30}$  hydrocarbyl, or hydrocarbyl substituted with halogen, alkyl, alkoxy, acyl;

or

$R^1$  is a group of the formula:  $-Mn(CO)_n (Lig)_p$  where Lig, n and p are as defined below; each Lig is a ligand species;

n is from 1 to 5; and

p is from 0 to 4;

such that  $n + p = 5$ .

3. (Original) A method as claimed in claim 2 wherein the initiator is or includes a compound of the formula (Ia):



where Lig, p and n are as defined for formula(I), such that  $p + n = 5$ .

4. (Original) A method as claimed in claim 3 wherein the initiator is dimanganese decacarbonyl.

5. (Currently amended) A method as claimed in ~~any one of claims 1 to 4~~ claim 1 wherein the an allylic halogen substituted chain termination agent is a compound of the formula (II):



where

Hal is halogen ; and

R<sup>3</sup> and R<sup>4</sup> are each independently hydrogen, or a group: (Link)<sub>n</sub>-R<sup>5</sup>,

where:

n is 0 or 1,

Link is a linking group; and

R<sup>5</sup> is halogen, glycidyl, an ethylenic double bond, carbonyl, carboxyl, cyano, hydroxyl, amino or quaternary amino or ammonium, a phosphorus containing species, a sulphur containing species, a hydrogen bond donor or acceptor, an aromatic ring, a heterocyclic ring, or a saccharide residue.

6. (Original) A method as claimed in claim 5 wherein Hal is a chlorine or bromine atom.

7. (Currently amended) A method as claimed in ~~any one of claims 1 to 6~~ claim 1 wherein the reactive substrate is also a chain terminating agent.

8. (Currently amended) A method as claimed in ~~any one of claims 1 to 6~~ claim 1 wherein the reactive substrate is or includes a halogen substituted alkane, alcohol or carboxylic acid ester, an aromatic substituted alkyl halide, a ring substituted benzyl halide, or a sulphonyl halide.

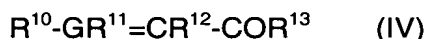
9. (Original) A method as claimed in claim 8 wherein the reactive substrate has multiple halogen substitution.

10. (Original) A method as claimed in claim 8 wherein the reactive substrate is or includes carbon tetrachloride, carbon tetrabromide, chlorotribromomethane, trichloromethane, tribromomethane, dichloromethane, dibromomethane, 1,1-dichloroethane, 1,1-dibromoethane, 1,1,1-trichloroethane, 1,1,1-tribromoethane, 2, 2-dichloroethanol, 2, 2-dibromoethanol, 2,2,2-trichloroethanol, 2,2,2-tribromoethanol, trichloroacetic acid, C<sub>1</sub> to C<sub>6</sub> alkyl esters of trichloroacetic acid, C<sub>2</sub> to C<sub>6</sub> alkyl 2-bromo-2-methyl propionates, benzyl halides, 2-halo-2-phenylethanes, 4-alkyl benzyl halides, 4-fluorobenzyl bromide, 4-chlorobenzyl bromide, 4-fluorobenzyl chloride, 4-chlorobenzyl chloride, 1,2-di(bromomethyl)benzene, benzene sulphonyl chloride and toluene sulphonyl chloride.

11. (Currently amended) A method as claimed in ~~any one of claims 1 to 10~~ claim 1 wherein the monomer is or includes one or more of an acrylic monomer, vinyl acetate, vinyl halide, styrene,  $\alpha$ -methyl styrene, vinyl toluene; vinyl caprolactone, vinyl caprolactam or *N*-vinyl pyrrolidone.

12. (Original) A method as claimed in claim 11 wherein the monomer includes at least 40 mole% of acrylic monomer or monomers.

13. (Currently amended) A method as claimed in ~~either claim 11 or claim 12~~ claim 11 wherein the acrylic monomer is or includes monomer of the formula (IV):



where

$R^{10}$  is methyl or, and desirably, hydrogen;

$R^{11}$  is methyl or, and desirably, hydrogen;

$R^{12}$  is methyl or hydrogen;

provided that at least one of  $R^{11}$  and  $R^{12}$  is hydrogen, and

$R^{13}$  is  $-OR^{14}$ , or  $-NR^{15}R^{16}$  where  $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are each hydrogen, hydrocarbyl, or a polyalkyleneoxy chain.

14. (Original) A method as claimed in claim 13 wherein the monomer is or includes one or more acrylate or methacrylate ester; acrylic or methacrylic acid; acrylic or methacrylic amide; or a sulphonated acrylic monomer.

15. (Currently amended) A method as claimed in ~~any one of claims 1 to 14~~ claim 1 wherein the reaction conditions include heating the reaction mixture containing the manganese carbonyl radical initiator to initiate thermolysis of the initiator.

16. (Original) A method as claimed in claim 15 wherein the reaction is carried out at a temperature of from 50 to 150°C, particularly 50 to 100°C.

17. (Currently amended) A method as claimed in ~~any one of claims 1 to 16~~ claim 1 wherein the reaction conditions include exposing the reaction mixture containing the manganese carbonyl radical initiator to actinic radiation to initiate photolysis of the initiator.

18. (Original) A method as claimed in claim 17 wherein the actinic radiation is visible or ultraviolet light.
19. (Currently amended) A method as claimed in ~~either claim 17 or claim 18~~ claim 17 wherein the reaction is carried out at a temperature of from -50 to 100°C.
20. (Currently amended) A method as claimed in ~~any one of claims 1 to 16~~ claim 1 wherein the reaction mixture additionally includes a Lewis acid, particularly a metal containing Lewis acid.
21. (Original) A method as claimed in claim 20 wherein the Lewis acid is a magnesium salt, particularly a magnesium halide, such as magnesium bromide or magnesium chloride, a zinc salt, particularly a zinc halide, such as zinc bromide or zinc chloride, or zinc trifluoromethanesulfonate, a lanthanum salt such as lanthanum acetate, particularly as the heptahydrate, a ytterbium salt such as a ytterbium halide, particularly ytterbium chloride, or ytterbium triflate.
22. (Original) A catalyst system for polymerising ethylenically unsaturated monomers which is a combination of a manganese carbonyl radical initiator, a halogen containing reactive substrate and an allylic halogen substituted chain termination agent.
23. (Currently amended) A catalyst system as claimed in claim 22 wherein the initiator is or includes ~~a compound as defined in any one of claims 2 to 4~~ the compound of formula (I).
24. (Currently amended) A catalyst system as claimed in ~~either claim 22 or claim 23~~ claim 22 wherein the chain terminating agent is or includes ~~a compound as defined in any one of claims 5 to 7~~ the compound of formula (II).
25. (Currently amended) A catalyst system as claimed in ~~any one of claims 22 to 24~~ claim 22 wherein the reactive substrate is also a chain terminating agent.
26. (Cancelled).

27. (Currently amended) A catalyst system as claimed in ~~any one of claims 22 to 24~~ claim 22 which additionally includes a Lewis acid, particularly a metal containing Lewis acid.

28. (Original) A catalyst system as claimed in claim 27 wherein the Lewis acid is a magnesium salt, particularly a magnesium halide, such as magnesium bromide or magnesium chloride, a zinc salt, particularly a zinc halide, such as zinc bromide or zinc chloride, or zinc trifluoromethanesulfonate, a lanthanum salt such as lanthanum acetate, particularly as the heptahydrate, a ytterbium salt such as a ytterbium halide, particularly ytterbium chloride, or ytterbium triflate.

29. (Original) A polymer or copolymer of one or more ethylenically unsaturated monomers having at one end of the (co)polymeric chain a residue of a reactive substrate and a residue of a chain terminating agent at the other.

30-32. (Cancelled).